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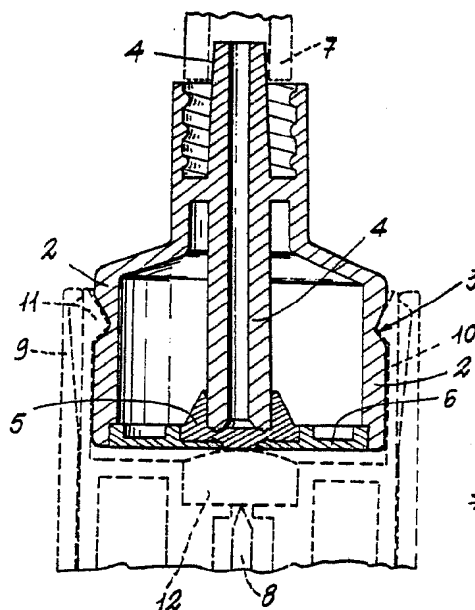
(71) Applicant: **FARMITALIA CARLO ERBA S.p.A.**  
**Via Carlo Imbonati n.24**  
**I-20159 Milan(IT)**

(72) Inventor: **Valentini, Luigi**  
**Via Pergine 12**  
**I-20 1489 Milano(IT)**  
Inventor: **Coccia, Mario**  
**Via Gramsci 25**  
**Cesano Boscone (MI)(IT)**

(74) Representative: **Kraus, Walter, Dr. et al**  
**Patentanwälte Kraus, Weisert & Partner**  
**Thomas-Wimmer-Ring 15**  
**D-8000 München 22(DE)**

(54) **Device for coupling a small tube to an apparatus adapted for fitting a syringe to a drug holding bottle.**

(57) Device for easily and simply coupling to the free end of a small tube (7) mounted on a transfusion needle an apparatus of the type used for coupling a syringe to a drug holding bottle. The device comprises a hollow shaped body (1) coupled to the small tube (7). The hollow body (1) is closed by a plug (5) and a collar (2) shaped like the mouth of a conventional drug bottle projects from the body (1); the collar (2) axially extends and a continuous annular recess (3) is formed therein having such a profile and arrangement to allow for the teeth (11) projecting from the resilient lugs (10) of the apparatus thereto the device is to be coupled to be inserted and locked therein.



*Fig. 2*

**EP 0 255 025 A1**

# DEVICE FOR COUPLING A SMALL TUBE TO AN APPARATUS ADAPTED FOR FITTING A SYRINGE TO A DRUG HOLDING BOTTLE

The GB Patent Application Serial N°. 2.178.664A discloses a device for coupling, under safe conditions, one end of a drug delivering small tube to an apparatus for coupling a syringe to the drug holding bottle.

This device has its free end, that is its end which is to be coupled to the mentioned apparatus, which has substantially the form of a body shaped as the mouth of a conventional bottle of the type used for holding a drug, from the shaped body three or more longitudinal fins projecting, said fins having an even flat longitudinal outer profile and operating for assuring an axial insertion of the mentioned free end of the device and a firm holding of this device in the seat of the apparatus thereon the drug holding syringe is mounted.

As stated in the above mentioned Patent Application, the apparatus to be coupled to the syringe is provided with three or more resilient lugs each of which bears a tooth which, as the free end of the device is inserted into said apparatus seat, engages under the device shaped free edge: such an apparatus is disclosed in the US Patent 4,576,211.

It has been found that the provision of the longitudinal fins projecting from the device shaped body (and the radially outermost longitudinal peripheral edge of which is even) may cause latching problems if the longitudinal fins are arranged in front of the teeth of the apparatus flexible or resilient lugs: in fact if the device is not arranged with its fins disengaged from the apparatus resilient lug teeth, then the device can not be coupled to the apparatus, and the user may not notice the drawback, with the very dangerous consequence (it should be remembered that many drugs are very toxic) that the device may detach from the apparatus during the drug delivering step.

Thus, the main object of the present invention is to provide a device of the mentioned type which may be easily inserted into the seat of the mentioned apparatus, while holding always a longitudinal orientation during the insertion, and being always firmly held in the seat, in an oscillation free condition, and being firmly engaged by the teeth projecting from the apparatus flexible or resilient lugs, as soon as the device is introduced into said seat.

This device comprises a shaped body defining a hollow open at a first end thereof a lug is formed for coupling it to a discharging small tube and also open at a second end thereof a hollow closure resilient plug is engaged, said body being provided, at said plug, with a projecting collar the shape and

size of which, in a perpendicular plane to the longitudinal axis of said shaped body, are analogous to or like those of a conventional bottle of the type used for holding drugs, wherein said collar axially peripherally extends for a length greater than that of the collar of a conventional bottle so as to define an elongated cylindrical surface therein a continuous annular recess is formed, said recess being so designed and arranged to allow for the teeth projecting from the resilient lugs of the apparatus thereto the device is to be coupled to be inserted thereinto and locked therein.

In order to better understand the structure and characteristics of the subject device, a preferred embodiment thereof will be disclosed hereinafter, with reference to the accompanying drawing, where:

Fig. 1 is a perspective view of the device according to the present invention;

fig. 2 is an enlarged scale cross-sectional view of the device.

The device shown in the drawing comprises a shaped body 1 which is laterally delimited by a cylindrical wall on the outer surface of which there is formed an annular recess 3: inside the cylindrical wall 2 and along its axis, a lug 4 extends, defining a hollow which is open at the top end thereof (as shown in the drawing), while at the other end thereof it is closed by a resilient plug 5 (made of rubber or like material) which is held firmly pressed on the free end of the lug 4 by means of a small rigid holding discs 6 affixed to the cylindrical wall, 2.

In a known way, on the free projecting end of the hollow lug 4 there is mounted one end of a resilient small tube 7 (a portion of which has been shown by the dashed line in fig. 2) to the other end of which an epicranial needle may be coupled for the transfusion into a vein of a patient of a drug which is injected into the hollow of the lug 4 by a needle 8 (which is shown in phantom in fig. 2) mounted on a not shown syringe.

The needle 8 is included in an apparatus like that disclosed in the US Patent 4,576,211: at the lower portion of fig. 2 there is shown, by a dashed line, that end portion of this apparatus thereat a seat is formed for housing and holding the device according to the present invention.

It should briefly be remembered that this seat is defined by a tubular cylindrical wall 9 therewithin resilient lugs 10 extend, a tooth 11 projecting inwardly from each said lug.

At the center of the apparatus seat a rubber or the like pad 12 projects which, as the subject device is locked in said seat, as is schematically shown in fig. 2, is held firmly pressed against the resilient plug 5.

The operation of the needle 8 bearing apparatus thereto the subject device may be coupled will be not disclosed herein, since it has been clearly illustrated in the mentioned US Patent 4,576,211.

A main feature of the device according to the present invention is that the cylindrical wall 2 has a cross-section equal or analogous to the cross-section of the collar of a conventional drug holding bottle; that the mentioned cylindrical wall axially extends for a length greater than the depth of the housing seat defined by the cylindrical wall 9 and the resilient lugs 10 of the apparatus, as is clearly shown in fig. 2; and that the annular recess 3 is so arranged and shaped that, as the device is coupled to the mentioned apparatus, the teeth 11 of the resilient lugs 10 will always enter said annular recess to be locked therein.

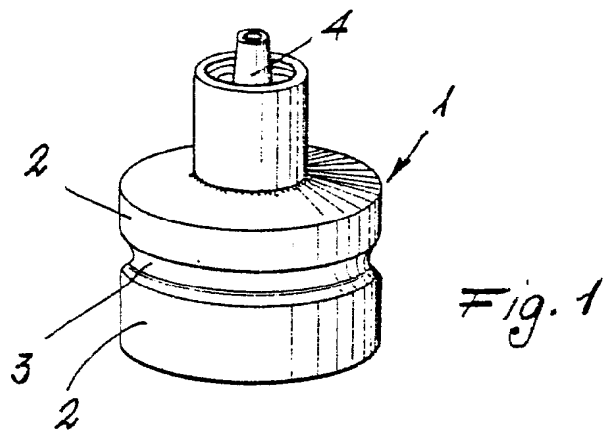
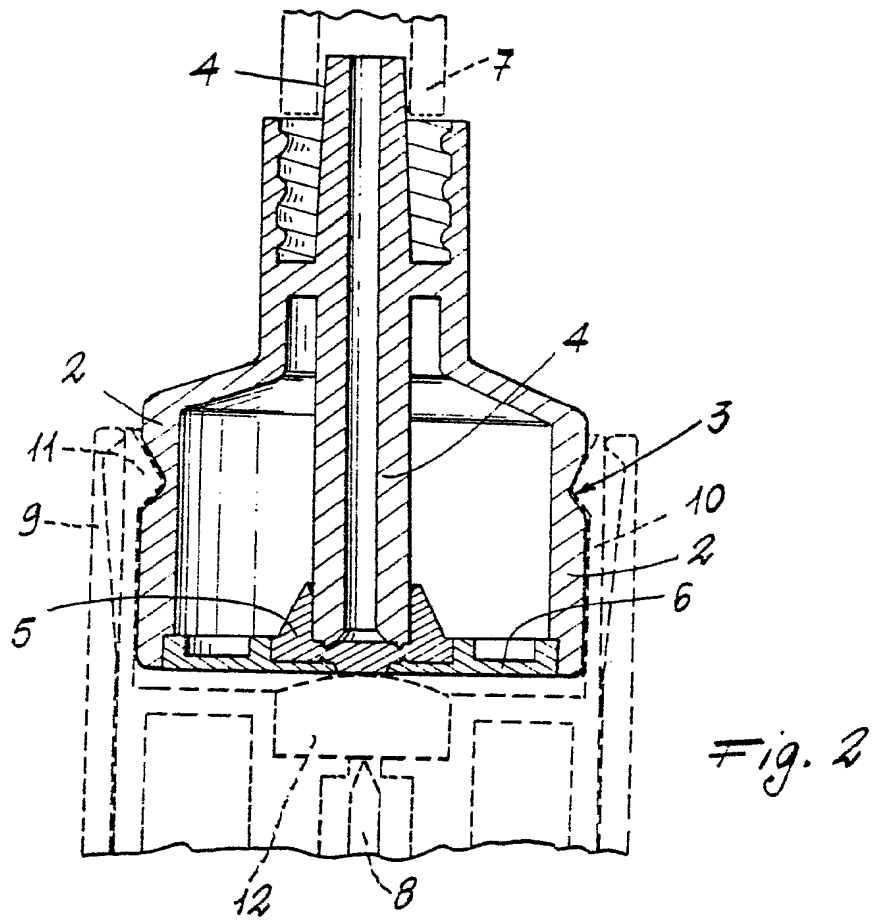
This means that as soon as the device is inserted into the seat of the apparatus and the resilient plug 5 is pressed on the pad 12, the teeth 11 will enter the annular recess 3 thereby always firmly engaging the device with the mentioned apparatus.

The fact that the cylindrical wall 2 axially extends in the indicated way is also an essential feature, since in this way a great resting area is provided for the outer surface of said cylindrical wall against the adjoining surface of the apparatus seat; thus the device will form a nearly rigid body with respect to the apparatus, since it can not oscillate in said apparatus housing seat.

### Claims

A device for coupling a small tube to an apparatus adapted for coupling a syringe to a drug holding bottle, comprising a shaped body defining a hollow open at a first end thereof a lug is formed for coupling it to a delivering small tube and also open at a second end thereof a hollow closure resilient plug is engaged, said shaped body being provided, at said plug, with a projecting collar the shape and size of which, in a perpendicular plane to the longitudinal axis of said shaped body, are analogous to or like those of a conventional bottle of the type used for holding drugs, wherein said collar axially peripherally extends for a length greater than that of the collar of a conventional bottle so as to define an elongated cylindrical surface therein a continuous recess is formed, said recess being so designed and arranged as to allow for the teeth

projecting from the resilient lugs of the apparatus thereto the device is to be coupled to be inserted therein and locked therein.





| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |  | EP 87110562.3                                  |
|---|--|--|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages              | Relevant to claim  | CLASSIFICATION OF THE APPLICATION (Int. Cl. 4) |
| D,P   | <u>GB - A - 2 178 664</u> (FARM. C. ERBA)<br>* Totality *<br>--                            | 1  | A 61 M 5/00                                    |
| A   | <u>US - A - 4 369 781</u> (R.W. GILSON<br>et al.)<br>* Totality, especially fig. 1 *<br>-- | 1  |  |
| A   | <u>US - A - 4 291 701</u> (R. BROWMAN)<br>* Totality, especially fig. 3 *<br>----          | 1  |  |
|   |  |  | TECHNICAL FIELDS<br>SEARCHED (Int. Cl. 4)      |
|   |  |  | A 61 M 5/00                                    |
| The present search report has been drawn up for all claims  |  |  |  |
| Place of search<br>VIENNA   |  | Date of completion of the search<br>24-11-1987   | Examiner<br>LUDWIG                             |
| <b>CATEGORY OF CITED DOCUMENTS</b>  |  |  |  |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |  | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |  |